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EXAMINER	
ALEJANDRO, RAYMOND	
ART UNIT	PAPER NUMBER
1745	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/833,202	MENASHI, JAMEEL	
	Examiner	Art Unit	
	Raymond Alejandro	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13 and 15-28* is/are pending in the application.

4a) Of the above claim(s) *2,9,11-13,15 and 16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-8,10 and 17-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 April 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/12/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/12/07 has been entered.

This correspondence is responsive to the amendment filed in connection with the foregoing RCE. Applicant has overcome the objection, the 35 USC 112 rejections, the double patenting rejection, and the rejection of claim 1 under Section 102. Refer to the above-referenced amendment for substance of applicant's rebuttal arguments and remarks. However, the present claims are again rejected over the previously applied grounds of rejection as seen hereunder and for the reasons of record.

Election/Restrictions

1. Claims 2, 9, 11-13 and 15-16 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 03/03/03.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 3-7, 17-19 and 21-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Yu et al 6399202.

The applied reference has a assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

The instant application is drawn to a fuel cell wherein the claimed inventive concept comprises an electrode comprising at least one modified carbon product having specific group attached thereto. Other limitations include the specific blocking layer and active layer; the binder-free active layer; the specific solid electrolyte membrane; and the specific organic group.

As to claims 17 and 22:

Yu et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached at least one organic group (abstract). It is further disclosed that the Yu et al's invention relates to gas diffusion electrodes such as the ones used in fuel cells and also relates to modified carbon products used to form one or more components of the gas diffusion electrodes (col 3, lines 44-49/ col 3, lines 56-60). It is

disclosed that gas diffusion electrodes prepared with modified carbon material have broad applications, one example of a gas diffusion electrode application would be a phosphoric acid type fuel cell using a pair of gas diffusion electrodes or for solid polymer electrolyte fuel cells (col 8, lines 45-50 & line 54). It is noted that Yu et al mentions publications in which they all are incorporated in their entirety by reference (col 8, lines 45-61). In addition, it is mentioned that the present invention can also be used in fuel cells; wherein each of these applications can incorporate the modified carbon material of the present invention in the electrode to obtain the discussed benefits (col 9, lines 3-4 and lines 8-13). *In view of this, it is inherent that a fuel cell should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Yu et al directly disclose the gas diffusion electrode including the carbon supports therefor (COL 1, lines 5-12/ COL 15, lines 38-43); and in combination with electrocatalyst particles (COL 1, lines 30-35/ COL 13, lines 15-20/ COL 2, lines 50-65) for the preparation of an active layer material (EXAMPLES 14-15/ COL 12, line 50 to COL 13, line 28).

Yu et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). **Examples 12-16** describe the formation of such a layer (EXAMPLES 12-16). *Thus, Yu et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Yu et al disclose the preference of proton conduction properties (COL 2, line 60-64). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product*

comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.

Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.

As previously mentioned, in particular, it is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses a gas diffusion electrode for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference). It is further disclosed that a fuel cell is mainly composed of the assembly of a cathode, an anode and in between them a solid electrolyte membrane (col 3, lines 7-11 of Dirven et al'000 which is incorporated by reference).

As to claim 3:

It is disclosed that the modified carbon product can be used for at least one component of electrodes such as the active layer and/or the blocking layer (abstract). It is disclosed that with respect to air diffusion electrode which is generally used in fuel cells, this type of electrode generally is constructed to have a blocking layer and an active layer (col 3, lines 62-65).

As to claim 4:

It is disclosed that the blocking layer, the active layer or both contain at least one modified carbon product; thus, it is preferred that the modified carbon product comprise at least one carbon product having attached at least one organic group (col 4, lines 31-47).

As to claims 4, 6, 18-19, 21 and 24-25:

It is disclosed that with respect to the active layer, preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type if hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.*

With respect to claim 5:

It is noted that Yu et al in column 8, lines 38-61 incorporates in its entirety by reference the teachings of Cabasso et al 5783325 who discloses electrolytic gas diffusion electrodes for fuel cells (ABSTRACT of Cabasso et al'325 which is incorporated by reference) wherein the active catalytic layer has a thickness between about 7 Tm and about 50 Tm (col 4, lines 50-56 of Cabasso et al'325 which is incorporated by reference). It is noted that the disclosed thickness range, particularly from 7-10 Tm, falls within the instantly claimed range. *Accordingly, this thickness magnitude provides good performance, provides a gas diffusion electrode with favorable chemical and electrical properties for fuel cells, provides a gas diffusion electrode*

with a controlled electrode structure, porosity and size making it possible to formulate each structure with properties that are most suitable for its function.

As to claim 7:

It is disclosed that one preferred advantage of the present invention is the ability to reduce such fluorine containing compounds in the blocking layer or active layer; the proper choice of organic groups attached onto the carbon product to form the modified carbon product can lead to a decrease if not an elimination of fluorine containing compounds (col 7, line 23-35); such fluorine containing compounds typically used are polytetrafluoroethylene and/or perfluoric sulphonic acid polymer (col 7, lines 17-21).

Regarding claim 8:

It is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses gas diffusion electrode with catalyst for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference) wherein the electrolyte is made of an ion exchange polymer or ionomer such as polytetrafluoroethylene (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference). It is taught that solid electrolyte membranes are made of an ion exchange polymer or ionomer because such material is very suited (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference).

As to claim 10:

It is disclosed that said organic group is p-$C_6H_4SO_3^-Na^+$ (claim 9). Thus, this specific ionic organic group comprises the instantly claimed organic group.

As to claim 14:

It is disclosed that the functional groups forming anions are ionizable (col 5, lines 15-16) and it is understood that cationic counter ions can be exchanged to other ions through an ion-exchange process (col 5, lines 42-44). Examples of ionizable functional groups that form cationic groups are disclosed (col 5, lines 15-40; col 5, line 57 to col 6, line 15). *Thus, it should be recognized that the organic group is either a proton-conducting group or electrode-conducting group.*

Concerning claim 23:

Disclosed is the use of a Co-containing material as a cationic metal catalytic material (COL 13, lines 15-20); as well as Pt (COL 2, lines 50-65).

With respect to claims 26-28:

Yu et al disclose hydrophobic organic groups (COL 6, lines 34-37).

Thus, the claims are anticipated.

4. Claims 17 and 26-28 are (*at least*) rejected under 35 U.S.C. 102(e) as being anticipated by Tosco et al 6881511.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

As to claim 17:

Tosco et al disclose gas diffusion electrodes containing modified carbon products wherein the modified carbon product is a carbon product having attached a least one organic group; and can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). Tosco et al disclose that their invention relates to gas diffusion electrodes such as the ones in metal-air batteries and fuel cells (COL 3, lines 65-67/ COL 4, lines 15-20/ COL 8, line 65 to COL 9, line 10/ COL 9, lines 22-26). *It is noted that the counter-electrode and the electrolyte are fuel cell components which are necessarily presented therein so as to have a functional fuel cell. In view of this, it is inherent that a fuel cell should at least comprise two electrodes and an electrolyte to satisfy mechanical, chemical and kinetic requirements (basic components) so as to obtain a fully functional or working fuel cell which converts electrochemical energy into electrical energy.*

Tosco et al disclose that the modified carbon product can be used for at least one component of the electrodes such as the active layer and/or the blocking layer (ABSTRACT). **Examples 12-15** describe the formation of such a layer (EXAMPLES 12-16). *Thus, Tosco et al describe with sufficient specificity that carbon-modified product is present in a layered form.*

Tosco et al disclose the preference of proton conduction properties (COL 2, line 67 to Col 3, line 3). *Furthermore, since the specifically recited carbon modified material i.e. (the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting" covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton conducting property.*

Moreover, products of identical chemical composition (i.e. carbon modified materials comprising a carbon product having attached at least one organic group) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.

With respect to claims 26-28:

Tosco et al disclose hydrophobic organic groups (COL 6, lines 50-60).

Thus, the claims are anticipated.

5. (*at least*) Claim 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Swathirajan et al 5316871.

Swathirajan et al disclose membrane- electrode assemblies for electrochemical cells (TITLE), particularly, fuel cells (COL 1, lines 20-23). It is disclosed that fuel cells include first and second electrodes and a solid polymer electrolyte membrane; each electrode is adhered to a respective one of the first and second membrane surfaces (COL 1, lines 42-50) and each electrodes comprise a respective group of finely divided carbon particles, finely divided catalytic particles supported in internal and external surfaces of the carbon particles and a proton conductive material intermingled with the catalytic and carbon particles (COL 1, lines 51-57). Divulged is that the carbon groups contains carboxylic groups on the carbon surface (*the organic group*) (COL 12, lines 60-65). Swathirajan et al disclose that is known to attach or bond the organic groups thereto (COL 12, lines 60-65).

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 8, 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al 6399202 as applied to claim 17 above, and further in view of Watakabe et al 2003/0198854.

Yu et al is applied, argued and incorporated herein for the reasons above.

Regarding claim 8:

It is noted that Yu et al in column 2, lines 19-30 and 53-65 incorporates in its entirety by reference the teachings of Dirven et al 5561000 who discloses gas diffusion electrode with catalyst for an electrochemical cell with solid electrolyte (ABSTRACT of Dirven et al'000 which is incorporated by reference) wherein the electrolyte is made of an ion exchange polymer or ionomer such as polytetrafluoroethylene (col 3, lines 32-40 of Dirven et al'000 which is

incorporated by reference). It is taught that solid electrolyte membranes are made of an ion exchange polymer or ionomer because such material is very suited (col 3, lines 32-40 of Dirven et al'000 which is incorporated by reference).

As to claim 10:

It is disclosed that said organic group is p-$C_6H_4SO_3^-Na^+$ (claim 9). Thus, this specific ionic organic group comprises the instantly claimed organic group.

However, the preceding prior art reference fails to specifically disclose the thickness of the carbon modified layer.

Watakabe et al disclose that is known to use fuel cells comprising a membrane electrolyte, a cathode and an anode (ABSTRACT) wherein the gas diffusion electrode has a gas diffusion electrode layer having a thickness of 10 μm (P. 0152).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in pertinent art at the time the invention was made to make the carbon-modified layer of either Yu et al by having the specific layer thickness of Watakabe et al as Watakabe et al disclose that is known in the art to use gas diffusion electrode comprising a gas diffusion electrode layer having a thickness of 10 μm for the benefit of providing a fuel cell exhibiting satisfactory terminal voltages and improved performance. *In this instant, Watakabe et al directly teach a layer in a gas diffusion electrode structure having a thickness within the claimed range.*

With respect to the thickness of claim 20, it would have been obvious to a skilled artisan at the time the invention was made to make Yu et al's layer by having the claimed thickness because even though thickness of their layers do not overlap or lie inside the claimed thickness a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not

overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metal Corp. of America v. Banner 227 USPQ 773 (Fed. Cir. 1985); In re Woodruff 16 USPQ 2d 1934 (Fed. Cir. 1990); In re Aller 105 USPQ 233 (CCPA 1955).* Moreover, the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine a satisfactory and optimum thickness.

9. Claims 1 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over: a) Tosco et al 6881511; and/or b) Swathirajan et al 5316871 as applied to claim 17 above, and further in view of Watakabe et al 2003/0198854.

Tosco et al and Swathirajan et al are applied, argued and incorporated herein for the reasons above. However, none of the preceding prior art references specifically disclose the thickness of the carbon modified layer.

Watakabe et al disclose that is known to use fuel cells comprising a membrane electrolyte, a cathode and an anode (ABSTRACT) wherein the gas diffusion electrode has a gas diffusion electrode layer having a thickness of 10 μm (P. 0152).

In view of the above, it would have been obvious to a person possessing a level of ordinary skill in pertinent art at the time the invention was made to make the carbon-modified layer of either Tosco et al or Swathirajan et al by having the specific layer thickness of Watakabe et al as Watakabe et al disclose that is known in the art to use gas diffusion electrode comprising a gas diffusion electrode layer having a thickness of 10 μm for the benefit of providing a fuel cell exhibiting satisfactory terminal voltages and improved performance. *In this instant, Watakabe et al directly teach a layer in a gas diffusion electrode structure having a thickness within the claimed range.*

With respect to the thickness of claim 20, it would have been obvious to a skilled artisan at the time the invention was made to make Tosco et al or Swathirajan's layer by having the claimed thickness because even though thickness of their layers do not overlap or lie inside the claimed thickness a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metal Corp. of America v. Banner 227 USPQ 773 (Fed. Cir. 1985); In re Woodruff 16 USPQ 2d 1934 (Fed. Cir. 1990); In re Aller 105 USPQ 233 (CCPA 1955).* Moreover, the normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine a satisfactory and optimum thickness.

Response to Arguments

10. Applicant's arguments, filed 01/12/07, with respect to claims 1 and 20 have been fully considered and are persuasive. The rejections of claims 1 and 20 under Section 102 have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Watakabe et al'854.

11. All of the remaining arguments advanced by the Applicant in the communication filed on 01/12/07 have been thoroughly considered but they are still unpersuasive.

12. With respect to applicant's arguments concerning all of the art rejections, applicant has continued to argue the arguments provided in the previous responses. In reply , the examiner states that the examiner also continues to disagree with applicant's position and applicant's characterization of the cited references. Since applicant has essentially repeated the position

taken in previous amendments, the examiner is also essentially maintaining the position taken in previous office action. The examiner's position is thus again set forth in detail infra for applicant's convenience.

13. The examiner continues to respectfully disagree with applicant's characterization of the prior art, and his (their) respective position.

14. Initially, the examiner asserts that it is not enough that applicant's representative personally believes that the prior art lacks such specific organic groups or proton conducting properties. That is to say, the arguments of counsel cannot take the place of evidence in the record. An assertion of what seems to follow from common experience is just attorney argument and not the kind of factual evidence that is required to rebut a prima facie case of inherent anticipation/obviousness (See ***MPEP 716.01 and 2145: Consideration of Applicant's Rebuttal Arguments***).

15. The gist of applicant's arguments is premised on the assertion that the prior art of record does not disclose "*A modified carbon product having attached at least one organic group that is proton-conducting*". However, this assertion is respectfully disagreed with. For instance, both Yu et al and Tosco et al disclose the preference of proton conduction properties in their gas diffusion-catalytic support bodies as presented supra. Additionally, since the specifically recited carbon modified material i.e. ("*the carbon support that comprises at least one modified carbon product, wherein said modified carbon product comprises a carbon product having attached at least one organic group that is proton conducting*") covers a very large number of applicable materials which can be used therefor, it is also contended that a layer comprising any combination of carbon modified materials would produce a layer exhibiting the specific proton

conducting property. Moreover, products of identical chemical composition (*i.e. carbon modified materials comprising a carbon product having attached at least one organic group*) can not have mutually exclusive properties, and thus, the claimed property (i.e. proton conducting), is necessarily present in the prior art material.

16. Applicant appears to conveniently characterize Yu et al's and Tosco et al' active layers by stating that such active layers are not the same as applicant's active layer because Yu et al and Tosco et al's active layers were subject to a specific pyrolisis treatment as shown in their respective EXAMPLES 14-15, thereby, not having organic groups present therein or proton conducting properties. In response, the examiner firstly asserts that applicant's claimed invention are entirely silent about the process-of-making the specific active layer so as to fairly contend that at least claim 17 circumscribes "a product-by-process" limitation. In this event, applicant's arguments concerning this issue are completely irrelevant, inaccurate and non-commensurate in scope with the present claim language. Also, the examiner secondly asserts that assuming for argument purposes that such is the case (*i.e. that applicant's claimed invention includes a product-process limitation, a point clearly not conceded by the examiner*), there is still no objective evidence to show a difference in terms of structure or composition between the active layer at hand and the disclosed active layers; and/or unexpected results to rebut the prima-facie case of anticipation as it would apply to inventions incorporating a product-by-process clause (***See 2113 Product-by-Process Claims***).

17. As far as applicant's arguments against the rejection under Section 103 based upon Watakabe et al, note that it is unnecessary that such a reference specifically teaches or discloses what applicant is contending (i.e. *do not use a modified carbon product as part of the active*

layer). Watakabe et al was cited to show that prior art contemplates gas diffusion layers or layers on the gas diffusion electrode having the claimed thickness per se, and since Watakabe et al disclose so, such a limitation has been satisfactorily met. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. (*Emphasis added→*) Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

18. In response to applicant's arguments concerning claims 21 and 23-24, note that Yu et al disclose that preferably the active layer contains a modified carbon product wherein the carbon product preferably has attached at least one type if hydrophobic organic group (col 4, line 66 to col 5, line 10). Yu et al also disclose a gas diffusion layer wherein a catalytic layer is formed on a porous back support by mixing catalyst particles of Pt (col 2, lines 50-57); wherein in some cathode structures the solution is made of PT/C catalyst powder (col 2, lines 62-65). It is further noted that Yu et al's teaching refers to a technique disclosed by US patent 5,561,000 which is incorporated in its entirety by reference herein (col 2, lines 19-21 and 50-65). *Thus, Yu et al's teaching fully encompasses the teachings of the '000 patent.* In addition to that, disclosed is the use of a Co-containing material as a cationic metal catalytic material (COL 13, lines 15-20); as well as Pt (COL 2, lines 50-65).

19. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "*As clarified by the amendment to claim 1, an active layer is present in the gas diffusion electrode or counter-*

electrode or both, and the layer has a film thickness of 10 microns or less") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). No where in independent claim 17 the examiner can find the foregoing limitations (*i.e. a) the active layer being part of the gas diffusion electrode or counter-electrode or both; and b) the specific thickness of the layer*). Thus, applicant's arguments are not commensurate in scope with the presently claimed invention of independent claim 17.

20. In response to applicant's argument that Swathirajan et al'871 only indicates an oxidized surface and does not indicate an attached organic group, it is contended that the prior art reference discloses the use of carbon groups containing carboxylic groups on the carbon surface (*the organic group*) (Swathirajan et al'871-COL 12, lines 60-65). Swathirajan et al further disclose that is known to attach or bond the organic groups thereto (COL 12, lines 60-65). Therefore, Swathirajan et al'871 readily envision attaching or bonding an organic group such as a carboxylic group to the surface of the carbon material.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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